

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 1. This sheet, which includes Figs. 1-2, replaces the original sheet that includes Figs. 1-2.

Attachment: Replacement Sheets

REMARKS

This amendment is being filed in response to the Office Action having the mailing date of November 26, 2008. Claims 1-2, 5, 10-11, 17-19, and 22-24 are amended. Claims 8-9 and 21 are canceled. Claims 25-29 are new. No new matter has been added by way of this amendment. With this amendment, claims 1-7, 10-20, and 22-29 are pending.

Drawings

The present Office Action requests a "Prior Art" designation for Figure 1. Accordingly, replacement sheets of drawings, having the requested designation for Figure 1, are being submitted herewith.

It is kindly requested that these formal drawings replace the drawings that are currently on file.

35 U.S.C. § 112 Rejections

Claims 1, 5-14 and 23-24 were rejected as indefinite.

Independent method claims 1 and 5 have been amended and clearly set forth positive steps. As such, Applicants respectfully submit that independent claims 1 and 5, as well as claims 6-7, 11-14 and 23-24 which variously depend directly or indirectly from claims 1 or 5, are not indefinite. Claim 10 which has been rewritten into independent form also sets forth positive steps, and is thus also not indefinite.

35 U.S.C. § 101 Rejections

Claims 1, 5-14 and 23-24 were rejected under 35 U.S.C. § 101 for purportedly not falling within one of the four statutory categories of invention.

Although Applicants disagree that such claims were directed to non-statutory subject matter, independent claims 1 and 5, as well as rewritten independent claim 10, have been amended in order to expedite prosecution. In particular, claim 1 has been amended to recite, *inter alia*, "under control of at least one of a configured hardware circuit and a configured

computer, encoding said input video data using the selected at least one encoding parameter.” Amended independent claims 5 and 10 include similar recitations.

As claims 1, 5 and 10 each recite methods that include encoding input video data “under control of at least one of a configured hardware circuit and a configured computer” and are, thus, tied to a particular machine. According to the Federal Circuit, such a process is patent-eligible under § 101 because a “claimed process involving a fundamental principle that uses a particular machine or apparatus would not pre-empt uses of the principle that do not also use the specified machine or apparatus in the manner claimed.” *Bilski*, Slip Opinion at pp. 10-11. Method claims 1, 5 and 10 are each tied to at least one of a configured hardware circuit and a configured computer. According, such amended claims satisfy the first prong of the “machine-or-transformation” test.

For at least this reason, Applicants respectfully submit that claims 1, 5, and 10, as well as their dependent claims, are clearly drawn to statutory subject matter.

Claims 18-19 and 22 were rejected under 35 U.S.C. § 101 as allegedly encompassing non statutory subject matter, with such purportedly non statutory subject matter being indicated in the Office Action as “software modules executed by the processor.”

Although Applicants disagree that claims 18-19 and 22 encompass non-statutory subject matter, Applicants have amended such claims in the interest of expediting prosecution. In particular, claims 18-19 and 22 have been amended to recite, *intra alia*, “at least one of: at least one dedicated hardware circuit configured to implement the predictor module; and at least one processor configured to execute the predictor module,” and are clearly directed to statutory machines. The mere fact that a machine claim also recites functional aspects is not enough, standing alone, to render the claim non-statutory. As indicated by the MPEP,

Computer programs are often recited as part of a claim. USPTO personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. . . . Only when the claimed invention taken as a whole is directed to a mere program listing, *i.e.*, to only its description or expression, is it descriptive material *per se* and hence nonstatutory.

MPEP, § 2106.01 (I) (emphasis added).

Thus, for at least these reasons, it is respectfully submitted that claims 18-19 and 22 are clearly drawn to statutory subject matter.

Prior Art Rejections

As an initial matter, Applicants thank Examiner for indication of the allowability of dependent claims 9 and 10. Applicants have amended claim 5 to include recitations of claim 9 and previously pending intervening claim 8. Claim 10 has been amended into independent form to include recitations of base claim 5 and previously pending intervening claim 8. Thus, Applicants respectfully submit that independent claims 5 and 10 are now in allowable form, as well as claims 6-7 and 11-14 which depend directly or indirectly from allowable claim 5.

Applicants respectfully submit, for at least these reasons and the reasons discussed below, all pending claims in the instant application are now clearly allowable over the cited references. As such, Applicants earnestly request favorable consideration and a notice of allowance.

35 U.S.C. § 102 Rejections

Claim 1, 5-7, 13, 17-18, 21, and 23-24 were rejected under 35 U.S.C. § 102(b) as being anticipated by Lee et al. ("Target Bit Matching for MPEG-2 Video Rate Control", hereinafter "Lee").

Applicants respectfully submit that Lee does not disclose the invention recited in amended claim 1. Claim 1, as amended, recites *inter alia*,

storing a predetermined relationship between metric values and respective quantities of encoded video data, the predetermined relationship determined during a calibration process and based at least in part on a metric function and reference video data;

receiving input video data after storing said predetermined relationship;

using said metric function to generate metric values from said input video data and respective encoding parameters;

selecting at least one of said encoding parameters on the basis of a desired quantity of encoded video data and said predetermined relationship between metric values and respective quantities of encoded video data; and

. . . encoding said input video data using the selected at least one encoding parameter.

Lee is generally directed to a bit rate control algorithm that determines quantization parameters to generate a number of actual coding bits close to a target number of bits for each picture using a relationship between the number of actual coding bits and the number of estimated bits of the previous macroblock. Lee, Abstract, page 66. In particular, Lee estimates the number of coding bits for a current macroblock by considering both the activity and the coding mode of the previous macroblock. Lee, Conclusions, page 69. However, Lee appears to lack many of the features and functionality recited in amended claim 1.

In particular, Lee does not appear to store a predetermined relationship or select an encoding parameter on the basis of such a predetermined relationship, such as recited in amended claim 1. In claim 1, the predetermined relationship between metric values and respective quantities of encoded video data are determined during a calibration process based in part on reference video data. The predetermined relationship is stored and subsequently used for selecting an encoding parameter that is used for encoding an input video data. In contrast, Lee appears to determine quantization parameters for a current macroblock based on the activity and coding mode of the previous macroblock of the same video sequence, not on “a predetermined relationship between metric values and respective quantities of encoded video data” that is determined during a calibration process based on reference video data, such as recited in claim 1.

Thus, for at least the foregoing reasons, claim 1 is allowable over Lee.

Claims 23-24 depend from claim 1 and are, thus, allowable over Lee based on their dependency, as well as for including additional limitations not found in Lee, although such limitations are not discussed here for the sake of brevity.

Although the language of independent claims 17, 18, and 21 differs from that of claim 1, the allowability of claims 17, 18, and 21 will be apparent in light of the discussion with respect to claim 1.

As previously noted, claim 5 has been amended to include recitations of previously pending allowable dependent claim 9. Thus, for at least this reason, amended claim 5

is allowable over the cited references. Claims 6-7 and 13 depend from claim 5, and are thus also allowable over the cited reference for at least this reason.

35 U.S.C. § 103 Rejections

Claims 11-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee in view of Wu et al. (US Patent No. 6,974,378, hereinafter “Wu”). Claims 11 and 12 depend directly or indirectly from amended allowable base claim 5, discussed above, and are thus allowable over Lee in view of Wu for at least that reason.

Claim 14 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee in view of Boice et al. (US Patent No. 5,644,504, hereinafter “Boice”). Claim 14 depends from amended allowable base claim 5, discussed above, and is thus allowable over Lee in view of Boice for at least that reason.

Claims 19 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee in view of Oikawa et al. (US Patent No. 5,677,734, hereinafter “Oikawa”).

Lee and Oikawa, alone or in combination, do not teach or suggest the invention of independent claim 19. Independent claim 19, as amended, recites *inter alia*,

... a selector module for selecting two of said quantization vectors on the basis of said estimates, first quantization and variable length coding modules for generating first encoded video data using a first of said selected quantization vectors, second quantization and variable length coding modules for generating second encoded video data using a second of said selected quantization vectors, and an output decision module for selecting one of said first encoded video data and said second encoded video data for output on the basis of at least one of the bit count value of said first encoded video data and the bit count value of said second encoded video data

Lee does not include any teaching or suggestion of a selector module, first quantization and variable length coding modules, second quantization and variable length coding modules, and an output decision module as recited in claim 19, and the Office Action does not appear to contend otherwise.

In addition, Oikawa does not teach or suggest such modules that are missing from Lee. As discussed in the background section of the instant application, Oikawa generally describes a method of modifying the quantization step of each macroblock in a video segment.

In Oikawa, a first quantization step decision circuit determines a segment wide quantization number, and a second quantization step decision circuit modifies the quantization number for each macroblock so that the quantity of quantized data is below a predetermined bit budget. *See* Oikawa, Fig. 6 and accompanying text (col. 6, line 55 to col. 7, line 58). In some cases, the quantization step determined by the first decision circuit may be outputted directly to a quantization circuit, and in other cases, for example when the quantization step determined by the first circuit produces a quantity of quantized data lower than a target value, the second decision circuit may be used to determine the quantization step that is outputted to the quantization circuit. Oikawa, col. 7, lines 17-34.

Oikawa does not select two quantization vectors, such as to generate first and second encoded video data using a first of the two and a second of the two, respectively, as recited in claim 19. Rather, as can be seen from the above description, Oikawa simply “selects” a single quantization number that is determined using a first and second decision circuit. Moreover, Oikawa clearly shows only a single variable length encoder 26 in Figure 1, and thus does teach or suggest the first and second variable length encoder modules recited in claim 19.

Thus, for at least the foregoing reasons, claim 19 is not anticipated by Lee in view of Oikawa.

In addition, withdrawn claim 20 depends from generic base claim 19. As discussed above, claim 19 is allowable over Lee and Oikawa. Thus, claim 20 is allowable over Lee and Oikawa by virtue of its dependency. Accordingly, as claim 19 is a generic base claim, Applicants respectfully request that claim 19 be reinstated and indicated as allowable.

Lee and Oikawa, alone or in combination, do not teach or suggest the invention of independent claim 22.

Independent claim 22, as amended, recites *inter alia*, “a predictor module for determining estimates for bit counts representing a quantity of video data encoded using respective quantization vectors, wherein determining estimates is based at least in part on a stored relationship between metric values and respective quantities of encoded video data, the stored relationship determined using reference video data during a calibration process.”

As discussed above with respect to claim 1, Lee does not teach or suggest such a stored relationship. Furthermore, the first and second quantization step decision units of Oikawa do not teach or suggest such a stored relationship.

Thus, for at least the foregoing reasons, claim 22 is allowable over Lee and Oikawa, either alone or in combination.

New Claims

New claims 25-29 have been added. Claims 25-29 read on elected Specie I.

Claims 25-26 depend from independent claim 17. As discussed above, none of the cited references disclose the invention recited in claim 17. As such, claims 25-26 are also allowable over the cited references by virtue of their dependency on an allowable base claim.

Claims 27-28 depend from independent claim 18. As discussed above, none of the cited references disclose the invention recited in claim 18. As such, claims 27-28 are allowable over the cited references by virtue of their dependency on an allowable base claim.

Claim 29 depends from claim 22. As discussed above, none of the cited references disclose the invention recited in claim 22. As such, claim 29 is allowable over the cited references by virtue of its dependency on an allowable base claim.

Conclusion

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
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RXI/SRS:dd

Enclosure:

1 Sheet of Replacement Drawings (Figures 1-2)

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